Intra-segmental timing in sound change: /aw/ in Philadelphia

Citation for published version:
Fruehwald, J 2018, 'Intra-segmental timing in sound change: /aw/ in Philadelphia' LabPhon 16, Lisbon, Portugal, 19/06/18 - 22/06/18, .

Document Version:
Publisher's PDF, also known as Version of record
Intra-segmental timing in sound change /aw/ in Philadelphia

**Intro**

Philadelphia (Labov et al. 2013) 

- 1900 /aw/ raising and fronting 
- 1950 /aw/ lowering and backing

Assumes /aw/ is a 2-part diphthong. Only describes the movement of the "nucleus" of the diphthong.

**Formant Trajectories**

Have been investigated with generation as a categorical variable. (Jacewicz, Fox & Salmons 2011)

Wholistic measures compared against continuous variables. (Rudal & Kohn 2014)

With GAMs, it is possible to model trajectories against continuous variables. (Wood 2006)

**Methods**

**Data**

Philadelphia Neighborhood Corpus 

- 19,517 tokens of pre-oral /aw/ 
- 279 white speakers

**Modelling**

Generalized additive models & tensor product smooths

Outcome (F1)

Predictor (dob)

Predictors

- All non-linear effects and interactions between: 
  - gender 
  - log2(duration) 
  - date of birth 
  - measurement point

- Random intercepts: speaker, word

- Random smooths: measurement point by speaker

**Results**

**formant tracks**

- Falling F2 & single F1 excursion at midpoint (diphthong?)

**max F1 excursion**

Timing of F1 maximum shifts diachronically

Target of F1 maximum is more stable

They interact with duration differently, over time

**vowel space trajectories**

Formant trajectories of /aw/ relative to F2

Delayed F1 maximum keeps F2/F1 difference larger for longer.

**Conclusion**

It is not straightforward to characterize /aw/ as a 2 part diphthong in Philadelphia.

Along with the shifts in vowel quality, there is a considerable shift in relative timing of vowel formant targets.

This puts /aw/ in line with some consonantal phonetic changes, such as Scottish derhoticization or Andalusian post-aspiration.

**Further directions**

Evaluating and improving quality of automated full formant track extraction.

Incorporating more linguistic (nasals) and social (education) factors into analysis.

Are the F1 and F2 qualities used differentially for linguistic or sociolinguistic perception?

**References**